Reasons For Allowing The Claims

The office action mailed on May 3, 2004 allowed Claims 69-79, 95-105, and 119.

New claim 122 combines rejected claim 58 and objected to claim 64 to place new claim 122 in condition for allowance per paragraph 48 (pages 27-28) of the office action mailed on May 3, 2004. Currently amended dependent claims 65-66 and previously presented dependent claim 67 are also in condition for allowance.

New claim 123 combines rejected claim 80 and objected to claim 86 to place new claim 123 in condition for allowance per paragraph 48 (pages 27-28) of the office action mailed on May 3, 2004. New dependent claims 124-128 which are dependent on new claim 123, and which are amended forms of dependent claims 87-91 (i.e. 87 becomes 124, 88 becomes 125, 89 becomes 126, 90 becomes 127, and 91 becomes 128) are also in condition for allowance.

New claim 129 combines rejected claim 106 and the limitations of objected to claim 107 (i.e. ``*the pore size of the absorbent pad being less than the pore size of the first and second filter means*'', thereby placing new claim 129 in condition for allowance per paragraph 48 (pages 27-28) of the office action mailed on May 3, 2004. Currently amended dependent claim 108 and previously presented dependent claim 111 are also in condition for allowance.

Currently amended claim 112 which removes the new matter (i.e. ``*non-elastomeric material*'' and replaces it with ``*thermoplastic material*'' as suggested by the examiner in the telephone interview, places currently amended independent claim 112 in condition for allowance, therefore

placing previously presented dependent claims 113-114 in condition for allowance.

Currently amended claims 80 and 120 which have removed the new matter (i.e. ``*hydrophilic*'' filter means and ``*hydrophilic*'' absorbent pad) should also be in condition for allowance for the following reasons.

1) The term ``hydrophilic'' in claim 80 was added as one reason to over come Jones et al. In applicants response to the first office action (see pages 68-77) applicant gives four reasons that Jones et al. does not teach the subject matter of claim 80, any one of which independently overcomes Jones et al. Only the second and third reasons refer to the term ``*hydrophilic*'', the first and fourth do not. Furthermore pages 78-80 of the response to the first office action give additional reasons for allowing claim 80.

2) The term ``hydrophilic'' in claim 120 was added as one reason to over come Jones et al. In applicants response to the first office action (see pages 125-127) applicant gives four reasons that Jones et al. does not teach the subject matter of claim 120, any one of which independently overcomes Jones et al. Only the second and third reasons (the fifth line of page 126 to the thirteenth line of page 127) refer to the term ``*hydrophilic*'', the first and fourth do not. Furthermore pages 127-130 of the response to the first office action give additional reasons for allowing claim 120.

3) With regard to claim 80, in the Final Office Action the examiner states in the second to the last paragraph of section 32. (starting at the top of page 19) ``*the*

thickness of the hydrophilic absorbent pad (18) being sufficiently greater than the thickness of the filter means (16) and thereby capable of having its top swell a distance above the top of the pad well to keep the filter means wrinkle free after being wetted with the fluid being filtered''. With regard to claim 120, the examiner states essentially the same thing in the fourth paragraph of section 39, on page 21.

> The above quote is an invention of the examiner and it is not the same as the applicants invention. Neither McNerney et al. or any of the other references address the problem of keeping the filter wrinkle free after the filter has been wetted, let alone solve the problem. **Hence applicants claims 80 and 120 produce new and unexpected results and hence are unobvious and patentable over McNerney et al. Furthermore** applicants claims 80 and 120 require both of the following conditions:
>
> a) **that the thickness of the absorbent pad be sufficiently greater than the thickness of the filter means, and**
>
> b) **that the thickness of the absorbent pad be sufficiently greater than the height of the pad well.**

Applicant explained in applicants Response to the Final Office Action dated May 3, 2004; in the first full paragraph of page 11. that when a standard thickness pad (i.e. the absorbent pad used in competitive devices) is used in a pad well

whose height is the same as the thickness of the pad (i.e. condition (a) above, the filter wrinkles when wetted. However when using the same pad in a pad well whose height is sufficiently less than the thickness of the pad (i.e. conditions (a) and (b) above), the filter remains wrinkle free when wetted. If only condition (a) is used (i.e. the examiners invention), the pad thickness would have to be increased substantially.

With regard to claims 80 and 120, in the Final Office Action the examiner states in the last paragraph of section 32, page 19; and in the last paragraph of section 39, page 22, ``*Although McNerney et al. does not disclose the thickness of the hydrophilic absorbent pad being sufficiently greater than the height of the pad well, it is considered obvious to one of ordinary skill in the art at the time of the invention, to modify the thickness of the absorbent pad such that it is thicker than the pad well, as a choice of the manufacturer or user of the apparatus to slow down the flow of filtered fluid through the apparatus and provide greater cushioning support for the filter means.*''

Applicant explained in applicants Response to the Final Office Action dated May 3, 2004; in the first full paragraph of page 11, that it is irrelevant to applicants invention as stated in claims 80 and 120 to ***``slow down the flow of filtered fluid through the apparatus''***, or ***``to provide greater cushioning support for the filter means''***. Furthermore the user would

consider slowing down the flow rate as negative, not as a positive.

4) With regard to claims 80 and 120, in the Final Office Action the examiner states in the third paragraph of section 32, page 18; and in the fifth paragraph of section 39, page 22, that McNerney et al. *contains a funnel with an open top*. In fact McNerney et al. contains a funnel with a closed top that contains an inlet port. The device of McNerney et al. is used as an in-line filter, therefore necessitating the closed top with the inlet port. Applicants invention as described in claims 80 and 120 is a batch filter apparatus into which the liquid to be filtered is poured into the open top funnel.

For the above four reasons applicant believes that independent claims 80 and 120 as currently amended by removing the word hydrophilic are proper, definite and define novel structures that are also unobvious. Therefore previously presented dependent claims 81-91 and 94, and currently amended dependent claim 92 that incorporate all of the subject mater of currently amended independent claim 80 and further limits currently amended claim 80 should also be allowed, and that previously presented dependent claim 121 that incorporates all of the subject mater of currently amended independent claim 120 and further limits currently amended claim 120 should also be allowed.

In the Advisory Action mailed on September 16, 2004, examiner states at the end of the paragraph of the continuation sheet that ``*The examiner contends that motivation for combining the references was given in the final rejection as evidenced at least by paragraphs 21, 25,*

27, 30 and the first full paragraph of page 7 and that such is sufficient motivation to the skilled man for combining the references.''

Applicant submits that the above mentioned paragraphs ***do not provide a reason from the prior art or some other teaching for making the combination of prior art references that are the basis of the 103 rejections. Applicant therefore submits that all of the 103 rejections are improper and should be withdrawn and that previously presented claims 58, 60-68, and 106-111, and 115-118 be allowed. Applicant respectfully requests that the examiner provide an explanation in accordance with M.P.E.P. § 706.02, Ex parte Clapp, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and Ex parte Levengood, supra, a ''factual basis to support his conclusion that it would have been obvious'' to make the combination.***

Reasons That Examiner Has Not Given The Proper Motivation For Making The 103 Rejections

Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood

It is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior art) must suggest that they be combined. E.g. as was stated in **In re Sernaker** 217 U.S.P.Q. 1, 6 (C.A.F.C. 1983):

> ``Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings.''

That the suggestion to combine the references should not come from applicant was forcefully stated in *Orthopedic Equipment Co. v. United States*, 217 U.S.P.Q. 193, 199 (CAFC 1983):

> ``It is wrong to use the patent in suit [here the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [here in claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO].''

As was further stated *in Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 5 U.S.P.Q.2d 1434 (C.A.F.C. 1988) ``[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.... *Something in the prior art must suggest the desirability and thus the obviousness of making the combination.*'' [Emphasis supplied.]

In line with these decisions, recently the Board stated in *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (P.T.O.B.A.&I. 1993):

``In order to establish a *prima facie* case of obviousness, it is necessary for the examiner to present *evidence*, preferably in the form of some teaching, suggestion, incentive or inference in the prior art, or in the form of generally available knowledge, that one having ordinary skill in the art *would have been led* to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention.... That which is within the capabilities of one skilled in the art is not synonymous with obviousness. ...That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention.... Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a *prima facie* case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that `would lead' that individual `to combine the relative teachings of the references.' ....Accordingly, an examiner cannot establish obviousness by locating references which describe various

aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.''

List Of Claims

65. (currently amended) The vacuum filtration apparatus of claim [[64]] 122 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated onto the base with the bottom inside edge of the lid

disposed below the bottom of the sloped surface of the one or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

66. (currently amended) The vacuum filtration apparatus of claim [[64]] 122 wherein a means is provided to vent the interior of the funnel when the lid is pressed onto the funnel.

67. (previously presented) The vacuum filtration apparatus of claim 65 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

80. (currently amended) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with an absorbent pad support means disposed in the bottom of said funnel well inside of said filter seal surface, entirely below said filter

seal surface, thereby creating a pad well below said filter seal surface, with an outlet port disposed below said absorbent pad support means, said outlet port being in fluid flow communication with said absorbent pad support means,

a funnel with an open top and an open bottom,

a [[hydrophilic]] filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface, with the outer periphery of the filter means sealed to the filtration apparatus to prevent bypass of un-filtered liquid around the filter means,

with the bottom portion of said funnel releasably attached to said base thereby creating a reservoir for un-filtered liquid above said filter means,

with a [[hydrophilic]] absorbent pad disposed in said pad well, with the downstream surface of said [[hydrophilic]] absorbent pad resting directly on the top surface of said absorbent pad support means, with at least a portion of the downstream surface of said filter means inside of the filter seal surface resting on the upstream surface of said absorbent pad,

with the thickness of said [[hydrophilic]] absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the [[hydrophilic]] absorbent pad being sufficiently greater than the thickness of the [[hydrophilic]] filter means,

so that the top of the [[hydrophilic]] absorbent pad will swell a sufficient distance above the top of the pad well to keep the [[hydrophilic]] filter means wrinkle free after both the [[hydrophilic]] filter means and the [[hydrophilic]] absorbent pad have been wetted by the liquid being filtered.

81. (previously presented) The vacuum filtration apparatus of claim 80 wherein the filter means is sealed to the filter seal surface of the base with a non-releasable seal, said non-releasable seal forming a closed loop.

82. (previously presented) The vacuum filtration apparatus of claim 81 wherein the non-releasable seal is a heat seal.

83. (previously presented) The vacuum filtration apparatus of claim 81 wherein the non-releasable seal is an ultrasonic seal.

84. (previously presented) The vacuum filtration apparatus of claim 81 wherein the non-releasable seal is a solvent seal.

85. (previously presented) The vacuum filtration apparatus of claim 80 wherein the filter means is releasably sealed with a compression seal between the bottom surface of the funnel and said filter seal surface.

86. (previously presented) The vacuum filtration apparatus of claim 80 wherein the top portion of said funnel is substantially cylindrical in shape,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp

tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall

of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

87. (previously presented) The vacuum filtration apparatus of claim 86 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one

or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated onto the base with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent

the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

88. (previously presented) The vacuum filtration apparatus of claim 86 wherein a means is provided to vent the interior of the funnel when the lid is pressed onto the funnel.

89. (previously presented) The vacuum filtration apparatus of claim 87 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

90. (previously presented) The vacuum filtration apparatus of claim 88 wherein the means to vent the interior of the funnel when the lid is positioned on the funnel is one or more vent slots in the top of the funnel.

91. (previously presented) The vacuum filtration apparatus of claim 89 wherein the means to vent the interior of the base when the lid is positioned on the base is one or more vent slots in the top of the inside wall of the funnel well of the base.

92. (currently amended) The vacuum filtration apparatus of claim 80 wherein the [[hydrophilic]] filter means has a sufficiently small pore size to remove bacteria from the liquid being filtered, and to trap the bacteria on the upstream surface of the filter means.

94. (previously presented) The vacuum filtration apparatus of claim 80 wherein the outlet port of the base is directly connectable to a vacuum source.

108. (currently amended) The vacuum filtration apparatus of claim [[107]] 129 wherein the pore size of the second filter means is sufficiently small to prevent the liquid in the pores of the second filter means from being sucked out of the pores of the second filter means by a vacuum source applied to the outlet port,

after the first filter means, the absorbent pad and the second filter means have been wetted by the liquid being filtered,

and after all of the liquid in the funnel has been sucked out of the funnel by the vacuum applied to the outlet port.

111. (previously presented) The vacuum filtration apparatus of claim 108 wherein the thickness of said hydrophilic absorbent pad is sufficiently greater than the height of said pad well, and wherein the thickness of the hydrophilic absorbent pad is sufficiently greater than the thickness of the first hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the first hydrophilic filter means wrinkle free after both the first hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

112. (currently amended) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with a filter support means disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port disposed below said filter support means, said outlet port being in fluid flow communication with said filter support means,

a filter means disposed in the bottom portion of said funnel well with the downstream surface of said filter means lying in the same plane as the plane of said filter seal surface,

a filter seal ring comprising an annular ring containing a substantially horizontal top surface, and a substantially horizontal bottom surface, with an inner end surface extending from the inner edge of the top surface to the inner edge of the bottom surface, and with an outer end surface extending from the outer edge of the top surface to the outer edge of the bottom surface, with the maximum diameter of the outer end surface of the filter seal ring being greater than the inside diameter of the funnel well, the filter seal ring being made from a [[non-elastomeric]] thermoplastic material,

with the filter seal ring press fitted into the funnel well, until the outer periphery of the filter means is compression sealed with a leak tight seal between at least a portion of the bottom surface of the filter seal ring and the filter seal surface of the base, with an interference fit formed between at least a portion of the outer end surface of the seal ring and the inside wall of the funnel well,

a funnel with an open top, and an open bottom, with the bottom portion of said funnel releasably attached to the said base, thereby creating a reservoir for un-filtered liquid above the filter means, with the funnel being attached to the base after the filter seal ring has been pressed into the funnel well of the base.

113. (previously presented) The vacuum filtration apparatus of claim 112 wherein the outer periphery of the substantially horizontal top surface of the filter seal ring slopes upward so that the outer edge of the top surface is disposed above the inner edge of the top surface,

and wherein the outer periphery of the substantially horizontal bottom surface of the filter seal ring slopes upward so that the outer edge of the bottom surface is disposed above the inner edge of the bottom surface.

114. (previously presented) The vacuum filtration apparatus of claim 112 wherein the top surface of the filter support means of the base is disposed within, and below, the filter seal surface of the base, thereby creating a pad well below the filter seal surface of the base, and wherein an absorbent pad is disposed in said pad well, with the downstream surface of said absorbent pad resting directly on the top surface of the filter support means, with a portion of the downstream surface of the filter means resting on the upstream surface of said absorbent pad.

120. (currently amended) A vacuum filtration apparatus comprising:

a base containing an outlet port capable of being adapted to a vacuum source, a filter seal surface disposed above said outlet port, and a pad well,

said pad well containing a substantially vertical side wall and a bottom wall, with the boundary of the top of the side wall of the pad well being coincident with the inner

boundary of the filter seal surface, with the bottom surface of the pad well being substantially parallel to the filter seal surface, and disposed entirely below the filter seal surface,

a [[hydrophilic]] absorbent pad disposed in said pad well, with the downstream surface of said [[hydrophilic]] absorbent pad resting directly on the bottom surface of the pad well,

a [[hydrophilic]] filter means, with the downstream surface of the outer periphery of the [[hydrophilic]] filter means in direct contact with the filter seal surface of the base, with the outer periphery of the [[hydrophilic]] filter means sealed to the vacuum filtration apparatus to prevent the flow of un-filtered liquid between the filter seal surface of the base and the downstream surface of the outer periphery of the [[hydrophilic]] filter means, with at least a portion of the downstream surface of the [[hydrophilic]] filter means disposed inside of the filter seal surface of the base resting on the top surface of the [[hydrophilic]] absorbent pad,

a funnel with an open top attached to the base, said funnel forming a reservoir capable of holding un-filtered liquid upstream of the [[hydrophilic]] filter means,

whereby un-filtered liquid from the funnel, is drawn first through the [[hydrophilic]] filter means, and then through the [[hydrophilic]] absorbent pad, and then into the outlet port, by applying a vacuum source to the outlet port,

with the thickness of said [[hydrophilic]] absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the [[hydrophilic]] absorbent pad being sufficiently greater than the thickness of the [[hydrophilic]] filter means,

so that the top of the [[hydrophilic]] absorbent pad will swell a sufficient distance above the top of the pad well to keep the [[hydrophilic]] filter means wrinkle free after both the [[hydrophilic]] filter means and the

[[hydrophilic]] absorbent pad have been wetted by the liquid being filtered.

121. (currently amended) The vacuum filtration apparatus of claim 120 wherein the bottom wall of the pad well further contains a pad underdrain, said pad underdrain directing the flow of filtered liquid from the absorbent pad to the outlet port, thereby reducing the pressure drop across the [[hydrophilic]] absorbent pad.

122. (new) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, with a filter support means integral to said base, disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port integral to said base disposed below said filter support means, said outlet port being in direct fluid flow communication with said filter support means,

a funnel with an open top, said funnel containing an integral flexible filter seal, with at least a portion of said integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, said integral flexible filter seal being compressible in the vertical direction,

a filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as the integral filter seal surface of said base,

with the bottom portion of said funnel releasably attached to said base, with the integral flexible filter seal of the funnel inserted into the funnel well of the base a sufficient distance to compress the integral flexible filter seal of the funnel in the

vertical direction, thereby releasably sealing the outer periphery of the filter means with a leak tight seal between the integral filter seal surface of the base and the bottom surface of the compressed integral flexible filter seal of the funnel, said releasable seal allowing the filter means to be removed from the apparatus after first removing the funnel,

whereby the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to releasably seal filter means of varying thickness', with a leak tight seal between said integral filter seal surface of said base and the bottom surface of said integral flexible seal of said funnel,

with the top portion of said funnel being substantially cylindrical in shape,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid

clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

123. (new) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with an absorbent pad support means disposed in the bottom of said funnel well inside of said filter seal surface, entirely below said filter seal surface, thereby creating a pad well below said filter seal surface, with an outlet port disposed below said absorbent pad support means, said outlet port being in fluid flow communication with said absorbent pad support means,

a funnel with an open top and an open bottom,

a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface, with the outer periphery of the filter means sealed to the filtration apparatus to prevent bypass of un-filtered liquid around the filter means,

with the bottom portion of said funnel releasably attached to said base thereby creating a reservoir for un-filtered liquid above said filter means,

with a hydrophilic absorbent pad disposed in said pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of said absorbent pad support means, with at least a portion of the downstream surface of said filter means inside of the filter seal surface resting on the upstream surface of said absorbent pad,

with the thickness of said hydrophilic absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered,

with the top portion of said funnel being substantially cylindrical in shape,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or

more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal

manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the

funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

124. (new) The vacuum filtration apparatus of claim 123 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated onto the base with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one

or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

125. (new) The vacuum filtration apparatus of claim 123 wherein a means is provided to vent the interior of the funnel when the lid is pressed onto the funnel.

126. (new) The vacuum filtration apparatus of claim 124 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

127. (new) The vacuum filtration apparatus of claim 125 wherein the means to vent the interior of the funnel when the lid is positioned on the funnel is one or more vent slots in the top of the funnel.

128. (new) The vacuum filtration apparatus of claim 126 wherein the means to vent the interior of the base when the lid is positioned on the base is one or more vent slots in the top of the inside wall of the funnel well of the base.

129. (new) A vacuum filtration apparatus comprising:

a base containing a funnel well with a first filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with a filter support means disposed in the bottom of said funnel well, inside of, and below, said first filter seal surface, thereby creating a pad well inside of, and below, said first filter seal surface, with said filter support means containing a second filter seal surface at its outer periphery, with an outlet port disposed below said filter support means, said outlet port being in fluid flow communication with said filter support means,

a funnel with an open top, with the bottom portion of said funnel releasably attached to said base,

a second filter means disposed in said pad well with the entire downstream surface of the second filter means in contact with said filter support means, and with the downstream portion of the outer periphery of said second filter means in contact with said second filter seal surface,

an absorbent pad disposed in said pad well, with the outer boundary of the absorbent pad disposed entirely within the boundary of the pad well, with the downstream surface of said absorbent pad resting on the upstream surface of said second filter means,

a first filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said first filter means lying in the same plane as the plane of said first filter seal surface of said base, with the outer periphery of said first filter means sealed to said base to prevent bypass around said first filter means, with at least a portion of the downstream surface of the first filter means that lies within the boundary of the pad well resting on the upstream surface of the absorbent pad,

wherein the pore size of the second filter means is less than the pore size of the first filter means,

and wherein the pore size of the absorbent pad is less than the pore size of the first and second filter means.